THE SCALED-SQUID *LEPIDOTEUTHIS GRIMALDII* JOUBIN FROM SOUTHERN AUSTRALIAN WATERS

The first substantiated record of *Lepidoteuthis grimaldii* from Australian waters (i.e. within the 200 nautical mile fishing zone) was by Lu & Phillips (1985) but they gave no details of specimens. The purpose of this paper is to provide more details of these specimens, in particular of one in the South Australian Museum (SAM) which was not seen by Lu & Phillips, and thus highlight this interesting record from Australian waters.

Lepidoteuthis grimaldii was first described by Joubin (1895) from two mantles from a sperm whale's stomach and from a fragment of a Risso's dolphin, both caught off the Azores. However, up until 1960 there had been only four records of this species and only two included the head (Clarke 1960) and a complete description was not available until 1962 (Clarke & Maul 1962). Since then the species has been recorded from most of the world's oceans, North and South Atlantic (Clarke 1966), Indian Ocean (Clarke 1980), Pacific Ocean between the New Hebrides and New Caledonia (Rancurel 1970), Pacific Ocean off Japan (Okutani *et al.* 1976), Tasman Sea (Clarke & MacLeod 1982) and Southern Ocean (Lu & Phillips 1985).

Complete specimens are still rare and apart from juveniles caught in nets (Clarke 1964 & 1980, Lu & Clarke 1975, Roper & Young 1975) and the record of Lu & Phillips (1985) all specimens have been obtained from the stomachs of predators, mainly the sperm whale, *Physeter catodon*, but also from Risso's dolphin, *Grampus griseus* (Joubin 1895); the lancet fish, *Alepisaurus ferox* (Rancurel 1970); the black-scabbard fish, *Aphanopus carbo* (Clarke & Maul 1962) and the tuna, *Germo obesus* (Clarke & Maul 1962).

The first published evidence that *L. grimaldii* might occur in Australian waters was provided by Clarke (1980) who recorded the buccal mass of two specimens from the stomachs of sperm whales caught by whaling ships operating out of Albany, Western Australia. Clarke & MacLeod (1982) also recorded the remains of specimens from the stomachs of sperm whales killed in the Tasman Sea between 33°S, 172°E and 40°S, 155°E but this is at least 550 km south-east of Cape Howe, eastern Australia. The Australian specimens referred to by Lu & Phillips (1985) and the one in SAM are noteworthy in that they are the first records of adults from other than predators' stomachs and indicate that the species occurs relatively close inshore along the south coast well within reach of commercial trawlers.

Details of specimens are as follows:

1. Male, 122 mm dorsal mantle length, 97 km east off Broken Bay, New South Wales (33° 28'S, 152° 33' E), depth 0–1000 m, Engel mid-water trawl, FRV 'Kapala', J. Paxton, 14 December 1977 (Australian Museum, Sydney AM, C111782).
2. Sex undetermined (viscera missing), 755 mm mantle length, approx. 50 km south-west off Beachport, South Australia, trawled in 550 m by 'Margaret Phillipa', 6–10 September 1982 (Museum of Victoria MV, F53159).
3. Sex undetermined (viscera decayed), 790 mm dorsal mantle length, approx. 40 km south-west off Beachport, South Australia, trawled in 220 m, obtained fresh from fish processor in Portland, Victoria by W. Zeidler, 22 October 1981 (SAM, D17589).

Specimen 1, a juvenile, is in relatively good condition and only the tips of the arms are missing. Generally it agrees with the description of young stages given by Clarke (1964) and some body measurements are given in Table 1.

TABLE 1. *Lepidoteuthis grimaldii* body measurements.

Character	Measurement (mm) Specimen 1	Specimen 3
Mantle length (dorsal)	122	790
Mantle length (ventral)	115	740
Mantle width (max)	26	210
Fin length	60	410
Fin width (max)	50	240
Gladius length	-	790
Gladius width (max)	-	63
Rachis length	-	480
Rachis width (max)	-	28
Max. width of scales	1.5	10

Specimen 2 is too damaged for accurate measurements.

Specimen 3 (Fig. 1) when collected was in good condition with only the tips of the arms missing. However, it was inadvertently left out of the freezer and deteriorated considerably before being measured and preserved. The head is too damaged for accurate measurement, other body measurements (Table 1) are according to Roper & Voss (1983) and beak dimensions (Table 2) are according to Wolff (1984). Some measurements are inaccurate due to the damaged nature of the specimen e.g. the fins are contracted, dorsal mantle length probably is longer as the tip of the tail is damaged and about 70 mm is missing and the mantle is probably not as wide when all internal

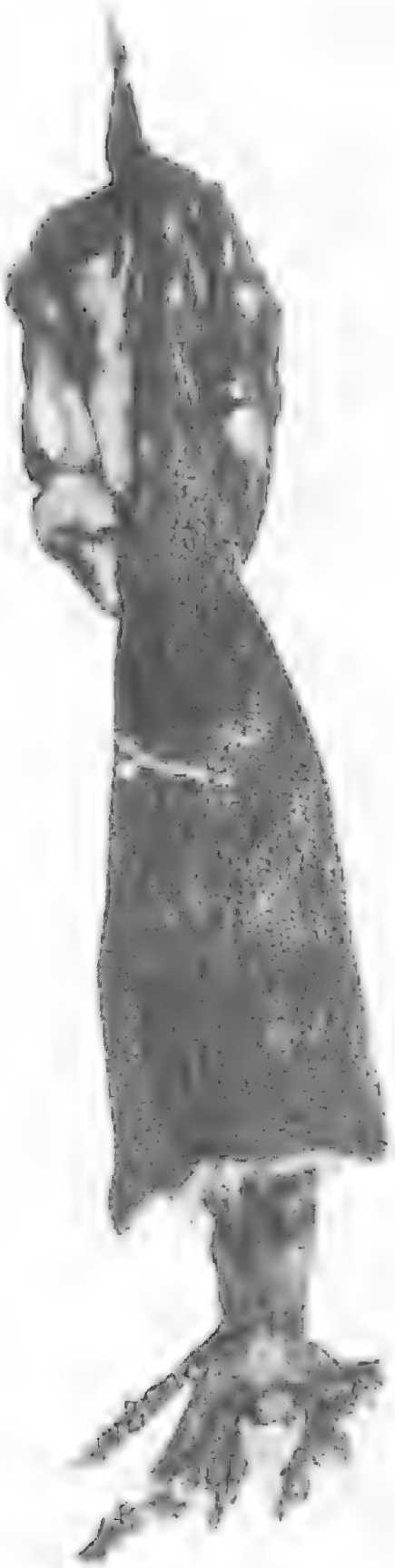

FIGURE 1. Ventral view of *Lepidoteuthis grimaldi*, SAM, D. 17589.

organs are intact. The beaks (Fig. 2a–c), radula (Fig. 2d) and gladius have been adequately described for this species by Clarke & Maul (1962) and the SAM specimen does not differ from that description.

TABLE 2. *Lepidoteuthis grimaldii* (SAM, D17589) beak dimensions.

Character	Measurement (mm)
Upper	
Hood length	39.5
Rostral length	17.6
Wing width	9.5
Rostral tip to inner margin of wing	26.0
Wing to crest length	43.2
Crest length	59.6
Jaw angle width	10.0
Lower	
Rostral tip to inner posterior corner of lateral wall	41.2
Rostral length	17.3
Rostral tip to inner margin of wing	35.2
Wing length	18.3
Jaw angle width	9.3

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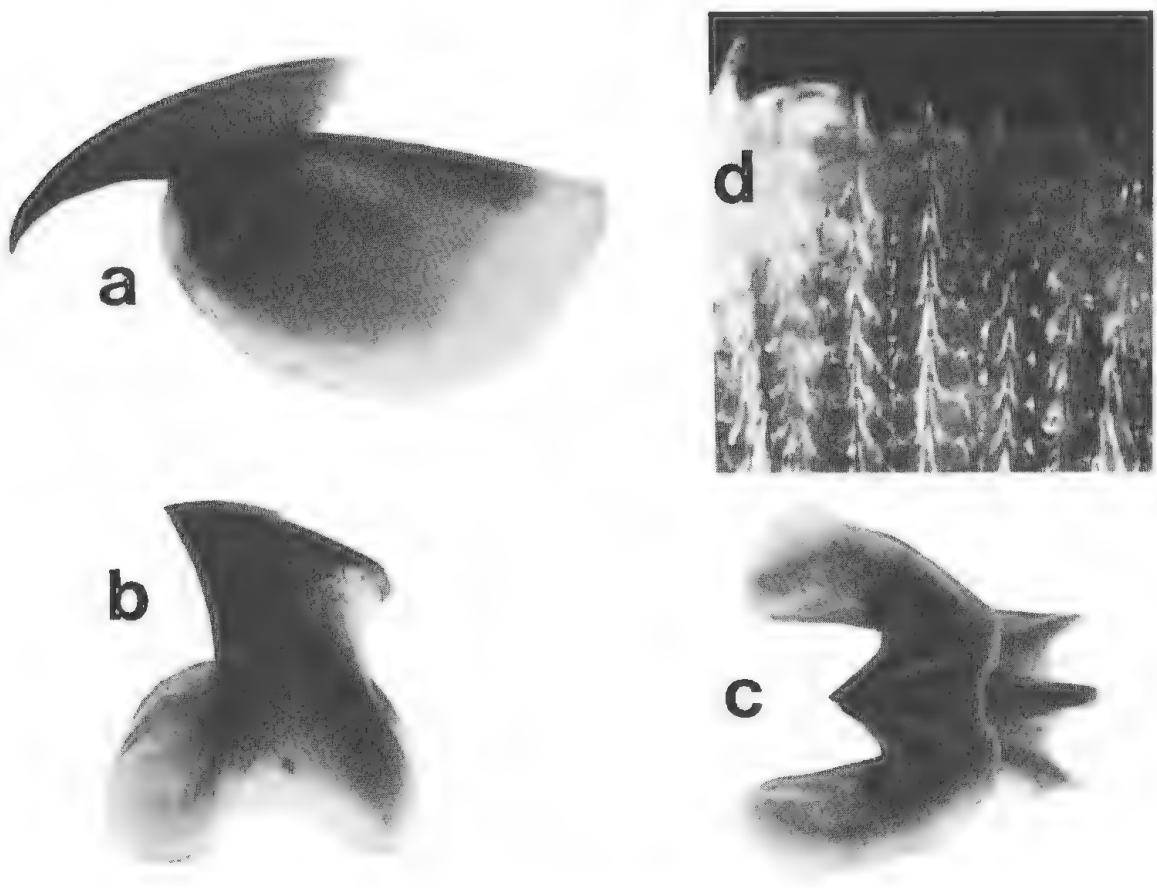

FIGURE 2. *Lepidoteuthis grimaldii* (SAM, D17589); a. Upper beak; b, c. Lower beak; d. Radula.